

Application No. 10/675,852
Second Preliminary Amendment dated July 31, 2006
Reply to Restriction Requirement

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Amendments to the Claims

Claim 1 (currently amended): A transgenic plant comprising a recombinant polynucleotide encoding a polypeptide having a ~~HAP3-subfamily-B~~ conserved domain,

wherein said polypeptide has the property of SEQ ID NO: 4 of regulating abiotic stress tolerance in a plant when said polypeptide is overexpressed, and wherein:

the ~~HAP3-subfamily-B~~ conserved domain is ~~sufficiently homologous at least 83% identical to the B-domain amino acid coordinates 26-116 of SEQ ID NO: 4 that and~~ the polypeptide binds to a transcription regulating region comprising the motif CCAAT; and

wherein said binding confers increased abiotic stress tolerance in said transgenic plant as compared to a non-transformed plant that does not overexpress the polypeptide, and

wherein the increased abiotic stress tolerance is selected from the group consisting of increased tolerance to cold, increased tolerance to salt, increased tolerance to mannitol, and increased tolerance to water deprivation.

Claim 2 (currently amended): The transgenic plant of Claim 1, wherein the ~~HAP3-subfamily-B~~ conserved domain is ~~at least 83% identical in amino acid sequence to the B-domain of SEQ ID NO: 4, and wherein said HAP3-subfamily-B domain comprises:~~

Asn-(Xaa)₄-Lys-(Xaa)₃₃₋₃₄-Asn-Gly;

where Xaa is any amino acid residue;

and overexpression of said polypeptide confers increased abiotic stress tolerance in said transgenic plant as compared to a non-transformed plant that does not overexpress the polypeptide.

Claim 3 (currently amended): The transgenic plant of Claim ~~[[2]]~~ 1, wherein said ~~HAP3-subfamily-B~~ conserved domain comprises:

Ser-(Xaa)₉-Asn-(Xaa)₄-Lys-(Xaa)₃₃₋₃₄-Asn-Gly;

where Xaa is any amino acid residue;

and overexpression of said polypeptide confers increased abiotic stress tolerance in said transgenic plant as compared to a non-transformed plant that does not overexpress the polypeptide.

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Claim 4 (previously presented): The transgenic plant of Claim 1, wherein said polypeptide comprises SEQ ID NO: 4.

Claim 5 (previously presented): The transgenic plant of Claim 1, wherein said recombinant polynucleotide has a nucleotide sequence that hybridizes over its full length to the complement of SEQ ID NO:3 under stringent conditions including two wash steps of 6x SSC and 65° C for 10-30 minutes.

Claim 6 (previously presented): The transgenic plant of Claim 5, wherein said nucleotide sequence comprises SEQ ID NO: 3.

Claims 7-9 (canceled)

Claim 10 (currently amended): The transgenic plant of Claim 1, ~~further comprising wherein the recombinant polynucleotide comprises~~ a constitutive, inducible, or tissue-specific promoter operably linked to said recombinant polynucleotide.

Claim 11 (currently amended): The transgenic plant of Claim 1, wherein said ~~HAP3-subfamily-B conserved~~ domain is at least 83% ~~86%~~ identical with the ~~B-domain amino acid coordinates 26-116~~ of SEQ ID NO: 4.

Claim 12 (currently amended): A method for producing a transgenic plant having increased tolerance to ~~osmotic~~ an abiotic stress as compared to a non-transformed plant that does not overexpress the polypeptide, the method steps comprising:

- (a) providing an expression vector comprising
 - (i) a nucleotide sequence that encodes a polypeptide having a [[B]] conserved domain that is ~~sufficiently homologous~~ at least 83% identical to the B-domain of SEQ ID NO: 3 that amino acid coordinates 26-116 of SEQ ID NO: 4 and the polypeptide binds to a transcription regulating region comprising the motif CCAAT and has the property of regulating abiotic stress tolerance in a plant as compared to a non-transformed plant that does not overexpress the polypeptide;
~~wherein said nucleotide sequence comprises a B-domain that is at least 83% identical with the B-domain of SEQ ID NO: 4;~~

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wherein the abiotic stress is selected from the group consisting cold, salt, mannitol, and water deprivation; and

- (ii) regulatory elements flanking the nucleotide sequence, said regulatory elements ~~being effective to control~~ controlling expression of said nucleotide sequence in a target plant;
- (b) introducing the expression vector into a plant cell; and
- (c) growing the plant cell into a plant and allowing the plant to overexpress said polypeptide; and;
- (d) ~~identifying one or more abiotic stress tolerant plants so produced with increased abiotic stress tolerance by comparing said one or more abiotic stress tolerant plants with one or more non-transformed plants that do not overexpress the polypeptide.~~

Claim 13 (previously presented): The method of Claim 12, wherein said nucleotide sequence hybridizes over its full length to the complement of SEQ ID NO: 3 under stringent conditions including two wash steps of 6x SSC and 65° C for 10-30 minutes.

Claim 14 (canceled)

Claim 15 (currently amended): The method of Claim 12, the method steps further comprising:

- ~~(e)~~ (d) crossing ~~one of~~ said abiotic stress tolerant plants plant with itself or another plant;
 - ~~(f)~~ (e) selecting seed that develops as a result of said crossing; and
 - ~~(f)~~ (f) growing a progeny plant from the seed,
- thus producing a transgenic progeny plant having increased tolerance to the abiotic stress.

Claims 16-19 (canceled)

Claim 20 (withdrawn): A recombinant polynucleotide comprising a nucleotide sequence at least 99.6% identical to SEQ ID NO: 3.

Claim 21 (withdrawn): The recombinant polynucleotide of Claim 20, wherein said recombinant polynucleotide comprises SEQ ID NO: 3.

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Claim 22 (withdrawn): The recombinant polynucleotide of Claim 20, wherein said recombinant polynucleotide is incorporated into an expression vector comprising one or more regulatory elements that are effective to control expression of said recombinant polynucleotide in a target plant

Claim 23 (withdrawn): The recombinant polynucleotide of Claim 22, wherein said recombinant polynucleotide is incorporated into a cultured host cell.

Claim 24 (new): A transgenic plant comprising a recombinant polynucleotide encoding a polypeptide having a conserved domain,

wherein the polypeptide has the property of SEQ ID NO: 4 of altering flowering time in a plant when the polypeptide is overexpressed, and wherein:

the conserved domain is at least 83% identical to amino acid coordinates 26-116 of SEQ ID NO: 4 and the polypeptide binds to a transcription regulating region comprising the motif CCAAT;

wherein said binding confers increased abiotic stress tolerance in said transgenic plant as compared to a non-transformed plant that does not overexpress the polypeptide, and

wherein said altered flowering time is selected from the group consisting of early flowering time and delayed flowering time.

Claim 25 (new): The transgenic plant of Claim 24, wherein the conserved domain comprises:

Asn-(Xaa)₄-Lys-(Xaa)₃₃₋₃₄-Asn-Gly;

where Xaa is any amino acid residue;

and overexpression of the polypeptide confers increased abiotic stress tolerance in the transgenic plant as compared to a non-transformed plant that does not overexpress the polypeptide.

Claim 26 (new): The transgenic plant of Claim 24, wherein the conserved domain comprises:

Ser-(Xaa)₉-Asn-(Xaa)₄-Lys-(Xaa)₃₃₋₃₄-Asn-Gly;

where Xaa is any amino acid residue;

and overexpression of the polypeptide confers increased abiotic stress tolerance in the transgenic plant as compared to a non-transformed plant that does not overexpress the polypeptide.

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Claim 27 (new): The transgenic plant of Claim 24, wherein the polypeptide comprises SEQ ID NO: 4.

Claim 28 (new): The transgenic plant of Claim 24, wherein the recombinant polynucleotide has a nucleotide sequence that hybridizes over its full length to the complement of SEQ ID NO:3 under stringent conditions including two wash steps of 6x SSC and 65° C for 10-30 minutes.

Claim 29 (new): The transgenic plant of Claim 28, wherein the nucleotide sequence comprises SEQ ID NO: 3.

Claim 30 (new): The transgenic plant of Claim 24, wherein the recombinant polynucleotide comprises a constitutive, inducible, or tissue-specific promoter.

Claim 31 (new): The transgenic plant of Claim 24, wherein the conserved domain is at least 86% identical with the amino acid coordinates 26-116 of SEQ ID NO: 4.

Claim 32 (new): The transgenic plant of Claim 24, wherein the transgenic plant is a transgenic seed comprising the recombinant polynucleotide of Claim 24.

Claim 33 (new): A method for producing a transgenic plant having altered flowering time as compared to a non-transformed plant that does not overexpress the polypeptide, the method steps comprising:

- (a) providing an expression vector comprising
 - (i) a nucleotide sequence that encodes a polypeptide having a conserved domain that is at least 83% identical to amino acid coordinates 26-116 of SEQ ID NO: 4 and the polypeptide binds to a transcription regulating region comprising the motif CCAAT and has the property of altering flowering time in a plant as compared to a non-transformed plant that does not overexpress the polypeptide;
wherein the altered flowering time is selected from the group consisting increased flowering time and delayed flowering time; and
 - (ii) regulatory elements flanking the nucleotide sequence, said regulatory elements controlling expression of said nucleotide sequence in a target plant;

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- (b) introducing the expression vector into a plant cell; and
- (c) growing the plant cell into a transgenic plant and allowing the transgenic plant to overexpress the polypeptide.

Claim 34 (new): The method of Claim 33, wherein said nucleotide sequence hybridizes over its full length to the complement of SEQ ID NO: 3 under stringent conditions including two wash steps of 6x SSC and 65° C for 10-30 minutes.

Claim 35 (new): The method of Claim 33, the method steps further comprising:

- (d) crossing said abiotic stress tolerant plant with itself or another plant;
 - (e) selecting seed that develops as a result of said crossing; and
 - (f) growing a progeny plant from the seed,
- thus producing a transgenic progeny plant having increased tolerance to the abiotic stress.